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| 10/594,122 | 09/25/2006 | Fredrik Gunnarsson | 4147-187 | 7362 |
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| EXAMINER WANG-HURST, KATHY W | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/594,122

Applicant(s)

GUNNARSSON ET AL.

Examiner

KATHY WANG-HURST

Art Unit

2617

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 38-66 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 38-66 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SE/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on 11/19/2008 has been entered. Claims 1-37 have been cancelled. Claims 38-66 have been added. Claims 38-66 are still pending in this application.

Response to Arguments

2. Applicant's arguments with respect to claims 1-37 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 38-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnett et al. (US 5428816) in view of Brody et al. (US 4670899).

Regarding claim 38, Barnett discloses a method of assigning a handover signal strength threshold to a cell in a cellular communications system(see Abstract, col. 3 lines 3-13 and col. 8 lines 11-33 assigning threshold values to cells for handoffs), comprising: classifying cells of said communications system into multiple handover-related classes based on radio signal characteristics of said cells (col. 7 lines 3-13 and col. 8 lines 11-33), each handover-related class being associated with a handover

signal strength threshold and each handover-related class comprises multiple cells (col. 7 lines 3-13 and col. 8 lines 11-33); determining to which handover-related class said cell is associated(col. 7 lines 3-13 and col. 8 lines 11-33); and assigning, to said cell, the handover signal strength threshold associated with said determined handover-related class(col. 7 lines 3-13 and col. 8 lines 11-33), wherein a handover signal strength threshold associated to a first handover-related class of said multiple handover-related classes being different from a handover signal strength threshold associated to a second handover- related class of said multiple handover-related classes (col. 7 lines 3-13 and col. 8 lines 11-33, cells are classified in Class II when signal level is above that of the serving cell and cells are classified in Class III when signal strength falls below critical threshold RSSI-C, therefore signal strength thresholds are different for each class).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 39, Barnett discloses a method of triggering a handover-related procedure for a user equipment in a cellular communications system, comprising:

classifying cells of said communications system into multiple handover- related classes based on radio signal characteristics associated with said cells, each handover-related class comprises multiple cells(col. 7 lines 3-13 and col. 8 lines 11-33); assigning, for each handover-related class, a unique handover signal strength threshold(col. 7 lines 3-13 and col. 8 lines 11-33); generating a handover triggering command based on measured signal quality for a communications link between said user equipment and a base station of a cell and on an assigned handover signal strength threshold associated with the handover-related class of said cell (col. 8 lines 34-67); and transmitting said handover triggering command to said user equipment, said handover triggering command allowing said user equipment to perform said handover-related procedure involving said cell(col. 8 lines 34-67), wherein a handover signal strength threshold associated to a first handover-related class of said multiple handover-related classes being different from a handover signal strength threshold associated to a second handover- related class of said multiple handover-related classes(col. 7 lines 3-13 and col. 8 lines 11-33).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody,

allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 40, Barnett discloses a method for modifying a list of connected cells for a user equipment in a cellular communications system, comprising: measuring a signal quality for a communications link between said user equipment and a base station of a cell (col. 2 lines 15-33); receiving a handover signal strength threshold for said cell, said handover signal strength threshold being determined based on the radio signal characteristics of said cell(col. 2 lines 15-33); and modifying said list based on said measured signal quality and said received handover signal strength threshold (col. 6 lines 3-15).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 49, Barnett discloses a system for assigning a handover signal strength threshold to a cell in a cellular communications system, said system comprising: means for classifying cells of said communications system into multiple handover-related classes based on radio signal characteristics of said cells(col. 7 lines

3-13 and col. 8 lines 11-33), each handover-related class being associated with a handover signal strength threshold and each handover-related class comprises multiple cells(col. 7 lines 3-13 and col. 8 lines 11-33); means, connected to said classifying means, for determining to which handover-related class said cell is associated(col. 7 lines 3-13 and col. 8 lines 11-33); and means, connected to said determining means, for assigning, to said cell, the handover signal strength threshold associated with said determined handover-related class, wherein a handover signal strength threshold associated to a first handover-related class of said multiple handover-related classes being different from a handover signal strength threshold associated to a second handover-related class of said multiple handover-related classes(col. 7 lines 3-13 and col. 8 lines 11-33).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 52, Barnett discloses a system for triggering a handover-related procedure for user equipment in a cellular communications system, said system comprising: means for classifying cells of said communications system into multiple

handover-related classes based on radio signal characteristics of said cells, each handover-related class comprises multiple cells(col. 7 lines 3-13 and col. 8 lines 11-33), means for assigning, for each handover-related class, a handover signal strength threshold(col. 7 lines 3-13 and col. 8 lines 11-33); means for generating a handover triggering command based on measured signal quality for a communications link between said user equipment and a base station of a cell and a handover signal strength threshold associated with the handover-related class of said cell(col. 8 lines 34-67 and Fig. 6); and means for transmitting said handover triggering command to said user equipment, said handover triggering command allowing said user equipment to perform said handover-related procedure involving said cell(col. 8 lines 34-67 and Fig. 6), wherein a handover signal strength threshold associated to a first handover-related class of said multiple handover-related classes being different from a handover signal strength threshold associated to a second handover-related class of said multiple handover-related classes(col. 7 lines 3-13 and col. 8 lines 11-33).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 55, Barnett discloses a unit for modifying a list of connected cells for user equipment in a cellular communications system, said unit comprising: means for measuring signal quality for a communications link between said user equipment and a base station of a cell (col. 2 lines 15-33); means for receiving a handover signal strength threshold for said cell, said handover signal strength threshold being determined based on the radio signal characteristics of said cell (col. 2 lines 33-60); and means, connected to said measuring means and said receiving means, for modifying said list based on measured signal quality and said received handover signal strength threshold (col. 6 lines 3-15).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 62, Barnett discloses a user equipment of a cellular communications system, said unit comprising: a signal quality measurer configured to measure signal quality for a communications link between said user equipment and a base station of a cell(col. 2 lines 15-33); a handover requester configured to receive a handover signal strength threshold for said cell, said handover signal strength threshold

being determined based on the radio signal characteristics of said cell(col.4 lines 27-41 and col. 8 lines 34-67); and a list modifier connected to said signal quality measurer and said handover requester (col. 6 lines 3-15), said list modifier configured to modifying a list of connected cells for said user equipment based on measured signal quality and said received handover signal strength threshold(col. 6 lines 3-15).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 41, Barnett discloses the method according to claim 40, further comprising: classifying cells of said communications system into multiple handover-related classes based on radio signal characteristics of said cells, each handover-related class comprises multiple cells(col. 7 lines 3-13 and col. 8 lines 11-33); assigning, for each handover-related class, a handover signal strength threshold; and determining to which handover-related class said cell is associated(col. 7 lines 3-13 and col. 8 lines 11-33), wherein a handover signal strength threshold associated to a first handover-related class of said multiple handover-related classes being different from a

handover signal strength threshold associated to a second handover- related class of said multiple handover-related classes(col. 7 lines 3-13 and col. 8 lines 11-33).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claims 42, 43, 45, 57, 58 and 60, Barnett discloses measuring signal quality between the cell and base station and updating including adding and deleting the list according to the measured signal quality and the criteria for updating cell list.

Regarding claims 44 and 59, combination of Barnett and Brody discloses the method according to claim 42, wherein said request generating step comprises generating a cell add request if said signal quality of said cell is larger than said signal quality of said current cell subtracted by said handover signal strength threshold.

Regarding claim 46, Barnett discloses the method according to claim 39, wherein said generating step comprises: receiving a handover-triggering request from said user equipment, said request being generated based on said measured signal quality of said cell, said handover signal strength threshold and measured signal quality for a communications link between said user equipment and a base station of a current best

serving cell to which said user equipment is connected(col. 8 lines 34-67); and generating said handover triggering command based on said request(col. 8 lines 34-67).

Regarding claims 47 and 51, combination of Barnett and Brody discloses the method according to claim 38, further comprising: determining communications traffic statistics for said cellular communications system; and re-classifying said cells of said communications system based on said radio coverage characteristics of said cells and said determined communications traffic statistics.

Regarding claim 48, Barnett discloses the method according to claim 38, wherein each handover- related class being associated with a unique handover signal strength threshold (col. 7 lines 3-13 and col. 8 lines 11-33).

Regarding claim 50, Barnett discloses the system according to claim 49, wherein said assigning means is configured for assigning a unique set of multiple handover signal strength thresholds to each handover-related class (col. 7 lines 3-13 and col. 8 lines 11-33).

Regarding claim 53, Barnett discloses the system according to claim 52, further comprising means for receiving a handover-triggering request from said user equipment (col. 8 lines 34-67), said request being generated based on said measured signal quality of said cell (col. 8 lines 34-67), said handover signal strength threshold and measured signal quality for a communications link between said user equipment and a base station of a current best serving cell to which said user equipment is connected (col. 7 lines 3-13 and col. 8 lines 11-33), and said generating means is configured for

generating said handover triggering command based on said request (col. 8 lines 34-67).

Regarding claim 54, Barnett discloses the system according to claim 49, wherein said system is provided in a radio network controlling node in said communications system (Fig. 2 and col. 3 lines 8-9).

Regarding claim 56, Barnett discloses the unit according to claim 55, wherein cells of said communications system are classified into multiple handover-related classes based on radio signal characteristics of said cells and each handover-related class being associated with a unique handover signal strength threshold (col. 7 lines 3-13 and col. 8 lines 11-33).

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claim 61, Barnett discloses the unit according to claim 55, wherein said unit is provided in said user equipment (col. 3 lines 25-30).

Regarding claim 63, Barnett discloses the user equipment according to claim 62, wherein cells of said communications system are classified into multiple handover-

related classed based on radio signal characteristics of said cells and each handover-related class being associated with a unique handover signal strength threshold.

Barnett discloses radio signal characteristics of the cells but fails to disclose radio coverage characteristics of the cells. Brody teaches radio coverage characteristics of the cells (col. 24 lines 6-28).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the invention of Barnett, to consider radio coverage characteristics in addition to signal characteristics, as taught by Brody, allowing a more effective way of assessing handoff and dynamic load balancing (col. 24 lines 6-28).

Regarding claims 64, 65 and 66, combination of Barnett and Brody discloses the user equipment making signal measurements between the user equipment and base station and comparing the measured values against thresholds and updating including adding and deleting the list accordingly.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KATHY WANG-HURST whose telephone number is (571) 270-5371. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, alternate Fridays, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/KATHY WANG-HURST/
Examiner, Art Unit 2617

/NICK CORSARO/
Supervisory Patent Examiner, Art Unit 2617